A REVISION OF THE AUSTRALIAN SPECIES OF *BOLBOCERAS*, WITH DESCRIPTIONS OF NEW SPECIES.

(Coleoptera, Fam. *Scarabœidæ*.)

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I attempt a revision of the Australian species of this genus only with much hesitation on account of the impossibility of dealing with them in a manner that can be treated as final or authoritative. The published descriptions of these insects are in many instances perfectly useless, and the types are widely dispersed over the world. The largest assembly of types is probably that in the Australian Museum at Sydney, and if there were anyone there working on the Coleoptera of that group he would probably have the best opportunities possible of doing successfully what I am now attempting. But so far as I can ascertain there is no such worker to be found, and, therefore, I am disposed to attempt the task, though with the knowledge that I cannot hope to accomplish more than the publication for the first time in a connected form of all that can be definitely ascertained by a writer outside Sydney as to the Australian species of the genus. This may at any rate form a treatise that may provoke those who have the means of procuring the information necessary for correcting it to do so; and so something more satisfactory may be brought within measurable distance.

These insects, disregarding their sexual characters, are extremely closely allied *inter se*, but on the other hand there are few if any *genera* in which strongly marked sexual characters are more frequent. Nevertheless there is, so far as I can ascertain, no external character that is invariably distinctive of either sex; with the result that it is a frequent experience to meet with

specimens the sex of which cannot be determined without dissection. This is especially the case with a numerous group of very small species, in which either there is very little external difference between the sexes or the difference between the sexes is of a kind that leads to the supposition of the two sexes being distinct species. I have ascertained with tolerable certainty that the former is the case with at least two species of the group in question, and therefore have assumed it to be so with the others (having no evidence to the contrary), but I cannot overlook the possibility that some Bolbocerata which I treat as distinct specifically may eventually prove to be so only sexually.

In Masters' Catalogue 39 names are given as having been applied to Australian species of Bolboceras, 8 of which are quoted as synonyms. Of the 31 species enumerated as valid all but four appear to me entitled to stand without question. *B. Kirbii*, Westw., is, however, probably a variety of *B. proboscideum*, Schreib., as Westwood himself remarks in a footnote added when the description was already in type (Trans. Linn. Soc. Vol. xxi. p. 13), and in any case *Kirbii* was doubly a nom. præocc., *B. Reichei*, Guér. (male), having been redescribed under that name (*Kirbii*) by Hope (Proc. Ent. Soc. 1841, p. 43), and also by a singular coincidence under the same name again (this time the female) by Bainbridge (Trans. Ent. Soc. 1842, p. 79). *B. puncticolle*, Macl., appears to me to be identical with *B. taurus*, Westw.; I can find no material difference between the two descriptions except that Westwood gives the size as long, 8 lines and Macleay as long, 6½ lines. I have seen specimens of the former size, but none smaller than 7¼l. The size of the cephalic horns is subject to considerable variation.

B. quadricorne, Klug, judged by the description, must be open to suspicion of identity with *frontale*, Guér. I have, unfortunately, no access to Klug's figure of his insect, and therefore can suggest the synonymy only with hesitation. Westwood says that he had not seen *quadricorne*. The other name that seems open to suspicion is that of *coronatum*, Klug, the description of which reads very much like that of the insect that Westwood described

as the female of *septemtuberculatum*, Bainb. The two are described as having the unusual character of the pronotum being transversely bicarinate, and are both reported from Western Australia. If they are identical and if Westwood is right in referring his insect to *7-tuberculatum*, then *coronatum* must be treated as a synonym. But with the double uncertainty indicated above, it is probably best to regard the two for the present as both valid species, distinguished from each other by the slight differences in tuberculation that are to be deduced from the descriptions. It may be added that Westwood quotes Reiche as considering that *7-tuberculatum* is the female of *B. hastifer*, Bainb., but decides that this is an error and the type of *7-tuberculatum* a male—in which I have no doubt he is right.

The eight names enumerated by Masters as synonyms in the genus, with two exceptions, agree with Westwood's determinations, and are, I have no doubt, correctly so enumerated. The two exceptions consist in the restoration of Guérin's names (*frontale* and *recticorne*) in place of Bainbridge's (*serricolle* and *hastifer*), in which Masters appears to be right.

Since the publication of Masters' Catalogue descriptions of Australian Bolbocerata have been published under ten new names, —three of them by Sir William Macleay and seven by me; eight of these ten are extremely distinct species, while two of them are closely allied to previously described forms—viz., *terræ-reginæ*, Blackb., and *simpliciceps*, Blackb. Since I described *B. terræ-reginæ* I have had the opportunity of examining numerous specimens of *B. proboscideum*, Schreib., from various parts of Australia, and find it so extremely variable in sexual characters that I am now disposed to look upon *terræ-reginæ* as an extreme local form of it, —a possibility that I suggested when I described the Queensland examples. The differences are sexual with the exception of a difference in the striation of the elytra, and with the knowledge that striation is undoubtedly affected by long immersion in spirits I am afraid that the validity of the species cannot be maintained on this character alone. Regarding the relation of *B. simpliciceps*, Blackb., to *B. planiceps*, Macl., I have nothing to add to what I

wrote when I described it,—viz., that the two must be very closely allied, but that unless Macleay was actually *incorrect* in his description of the front tibiæ they are distinct. I now describe 18 new species, bringing the total number to 54.

The Australian Bolbocerata are readily divisible into two main groups, in one of which the hind tibiæ have more than one transverse (or obliquely transverse) carina on their external face above the cariniform apex, while in the other group there is only one such carina. Unfortunately I cannot find that this (in my opinion by far the most satisfactory non-sexual) character is even referred to in any of the hitherto published descriptions of the insects in question, due no doubt to the fact that describers have not had occasion to look for non-sexual characters. But it follows that I am unable to apportion to either group with absolute certainty any species except those which I am able myself to examine. Nevertheless I am able to say that in no instance have I found the tibial sculpture of the First Group in any species not having a particular kind of sexual development (viz., 1 horn on the head and 2 on the pronotum of the male) and that all the species I have seen with that sexual development have the hind tibiæ pluricarinate; and as I have examined one or more species having sexual characters of each of the types of sexual form that have been attributed to Australian Bolbocerata, I am not at all likely to be wrong in assuming that the species not having male characters as indicated above must be excluded from the Group with multicarinate hind tibiæ even though I have not been able to verify the conclusion by examining specimens.

The males and females of the First Group (with the hind tibiæ multicarinate) present such extreme differences *inter se*—indeed have so little in common—that after long and careful efforts I have completely failed to find non-sexual characters on which it is possible to found a tabulation of the species, and therefore I have had to adopt the course of tabulating the males and females separately. The males present some variation in the degree of development of their sexual characters (in the few species of which I have seen numerous examples). Nevertheless there are

undoubtedly some respects in which I can find no variation, especially the *position* of the horns, and the shape and sculpture of the retuse area occupying the middle portion of the front of the pronotum. I find very little variation in the females. I may remark that although Sir W. Macleay in his descriptions seems to attach considerable importance to the form of the transverse carina at the base of the cephalic horn in the male, that character appears to me quite valueless, being absolutely variable and also varying with the point of view from which it is regarded.

There will be seen, when the surface of the head of a Bolboceras is examined, certain areæ marked off by fine raised lines which are arranged in the main on a uniform design in nearly all the Australian Bolbocerata, but which nevertheless vary in some details that appear to be genuinely specific. In males having strongly marked sexual characters on the head, some of the areæ are thrown out of form by the horns, etc., and made to assume different shapes, but essentially they are seen to be identical if carefully considered. As it will be necessary in the following pages to refer frequently to these areæ and lines, it seems desirable now to enumerate and name them. There is no real dividing line between the clypeus and the remainder of the head; nevertheless it seems convenient to use the word "clypeus." Carrying the eye forward from the front of the pronotum, the first inequality of the surface is an elevation (a transverse carina, often bifid or variously horned, or a mere horn or a tubercle), which I shall call the "frontal elevation." Some distance in front of this is another transverse carina (of very variable shape) which I shall call the "clypeal elevation." The clypeal elevation is returned at its extremities backward (in some species at an angle, in others with a curve) and runs longitudinally in varying length towards the back of the head; I shall call this longitudinal carina the "frontal margin," and the area quite or partially enclosed by the frontal elevation, the clypeal elevation and the frontal margins I shall call the "frons." The portion of the head in front of the clypeal elevation (which is divided by fine carinæ in most species into the "middle" and the two

"lateral" "areæ of the clypeus") I shall call the "clypeus." On either side of the frons a flattened or concave process projects over (and cutting into) the eye, which I shall call the "frontal wing," and in some species a carina runs forward from the back of the head close to the eye (in other species that carina is wanting, or confused with the frontal margin) which I shall call the "margin of the head." One of the modifications of the above characters seems to call for special remark, viz., that of the parts that I have called the "clypeal areæ." In the group of species with multicarinate hind tibiæ the lateral areæ (so-called) are in reality *above* and *behind* the middle area (sloping backward towards the eye in the females; scarcely traceable in the males—I think they form the lateral base of the frontal horn). To a casual glance they appear to be behind the clypeal elevation and therefore not part of what I have called the clypeus; but if these species be compared with those of other groups it will be seen that the carina most nearly continuing the line of the truncate middle part of the clypeal elevation does not really correspond with the carina that (where it is not obsolete) in the other groups is evidently the lateral part of the clypeal elevation, but with the carina that in those species runs obliquely forward and is unmistakably on the front face of (and a part of) what I have called the clypeus, and that the real continuation of the clypeal elevation is the hinder of the two carinæ that meet at each extremity of the truncate middle part of the clypeal elevation. As already remarked, this carina is scarcely (or not) traceable in the males of the First Group, but is lost in the base of the frontal horn which throws out of form and includes in itself all the other elevations of the front part of the head except the clypeal elevation. The correspondence indicated above of these carinæ in different Bolbocerata will be most readily observed by comparing a female of the First Group with a specimen appertaining to the Third Group, inasmuch as the carinæ in question take very variable directions in the Second Group, and in most of its species can be identified only when the eye has been trained by previous examination of the corresponding areæ in species of the Third Group and females of the First Group.

In Westwood's work on the Bolbocerata much importance was attributed to the form of the apical portion of the right mandible; but in the following pages I have not relied upon it, chiefly because there are many specimens in which it cannot be definitely ascertained without detaching the mandible. The external outline of the left mandible, however, is variable specifically and is easily examined; I have therefore treated it as of practical value in determining species.

The pronotum of all the Australian Bolbocerata known to me bears a large, usually ill-defined impression on either side somewhat behind the middle and near the lateral margin. I have called this by the name "sublateral fovea." It is variable in form both as an individual and specific character, and does not seem to me easy to use for distinguishing species.

The front margin of the pronotum usually bears a more or less distinct small impression on either side of its middle. In the species of the First Group (only) this impression takes the form of a very deep sharply defined circular fovea or "hole." Beyond that, I have not found it useful as a distinctive character.

I must not conclude these preliminary remarks without referring to the extremely valuable assistance I have received from Mr. W. W. Froggatt, who with most obliging courtesy has examined those of the species described by Sir W. Macleay that were unknown to me and drawn sketches of those parts on whose structure the following tabulation is based. Important parts of this memoir, therefore, are due to his, rather than to my, research.

Tabulation of Groups of Bolboceras.

Group i.—Upper face of hind tibiæ multicarinate transversely. Front margin of pronotum with two very deeply impressed small round foveæ.

Group ii.—Upper face of hind tibiæ with only one transverse carina above the cariniform apex. Front margin of pronotum not having deeply impressed foveæ. Carinæ dividing the clypeal areæ do not meet in the middle of the clypeal elevation.

Group iii.—Upper face of hind tibiæ and front margin of pronotum as in Group ii. Carinæ dividing the clypeal areæ meet in middle of clypeal elevation.

Tabulation of Species.

Group i.

Males.

*A. Frontal horn longitudinally carinate on its front — *Albertisi*, Har.

AA. Frontal horn not longitudinally carinate on its front.

B. Retuse area of pronotum concave.

C. Antennal club normal.

D. Frontal horn non-pilose.

E. Interval between apices of horns of pronotum much wider than head.

F. Frontal horn dentate behind — angulicorne, *Macl.*

FF. Frontal horn unarmed behind.

G. A deep sharply defined longitudinal median sulcus on surface of retuse area of pronotum — hippopus, *Macl.*

GG. Retuse area of pronotum not as in G. — cornutum, *Macl.*

EE. Interval between apices of horns of pronotum not wider than head.

F. 14th and 15th striæ of elytra confluent in front — rhinoceros, *Macl.*

FF. 14th and 15th striæ of elytra not confluent — Macleayi, *Blackb.*

DD. Frontal horn pilose.

E. Horns of pronotum branched, — the front branch long, porrect, —the hind short, erect — Reichei, *Guér.*

EE. Horns of pronotum not as in E.

F. Pronotum without concavities across or behind the retuse portion.

G. Tibiæ (especially the hind) comparatively short and wide (nearly as much so as in *rhinoceros*, Macl.) — cavicolle, *Macl.*

GG. Tibiæ notably more elongate and slender — cornigerum, *Macl.*

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* The names printed in italics are those of species which I do not feel confident of having seen, and whose place in the tabulation is more or less conjectural, being based upon the authors' descriptions.

FF. Pronotum with a very deep and elongate transverse sulcus behind the middle ..... aratum, *Blackb.*

FFF. Pronotum with a large nitid excavation on either side of middle near base.. ..... Sloanei, *Blackb.*

CC. Antennal club globular.

D. Upper part of retuse area of pronotum pilose..... Tatei, *Blackb.*

DD. Retuse area of pronotum glabrous ... .. Bovilli, *Blackb.*

BB. Retuse area of pronotum not concave..... *Carpentariæ*, Macl.

Females.

A. Frontal wings on a plane greatly lower than that of the frons..... cavicollle, *Macl.*

AA. Frontal wings continuing the plane of the frons.

B. Front tibiæ with 6 external teeth..... Sloanei, *Blackb.*

BB. Front tibiæ with only 5 external teeth.

C. Transverse carina of pronotum bent hindward at its ends so as to point to middle of sublateral foveæ.

D. Left mandible (viewed from above) strongly sinuate externally.

E. 14th and 15th striæ of elytra not confluent..... Macleayi, *Blackb.*

EE. 14th and 15th striæ of elytra confluent in their front part ..... rhinoceros, *Macl.*

DD. Left mandible (viewed from above) scarcely sinuate externally..... *neglectum*, Hope

CC. Transverse carina of pronotum not shaped as in C (and less strongly cariniform).

D. Left mandible (viewed from above) strongly sinuate externally before apex angulicorne, *Macl.*

DD. Left mandible not (or scarcely) sinuate externally.

E. Elytral interstices non-punctulate; elytra broadly margined at humeral angle... hippopus, *Macl.*

EE. Elytral interstices conspicuously punctulate; elytra narrowly margined at humeral angle.. ..... cornigerum, *Macl.*

Group ii.

First Subgroup (species not having, in either sex so far as known, an elongate transverse carina on the pronotum behind the middle).

Males.

A. The clypeus projects in front as a rostrum. Maxillary palpi very long and slender..... .... proboscideum, *Schreib.*
AA. Clypeus not rostriform. (Maxillary palpi less elongate and stouter.)
B. Pronotum with 4 horns or spines placed in a transverse row.
C. The clypeal and frontal elevations confused together into a single elevation ..... Froggatti, *Blackb.*
CC. The clypeal and frontal elevations distinct from each other.
D. The frontal elevation consists of three horns placed transversely..... armigerum, *Macl.*
DD. The frontal elevation consists of a single horn feebly bifid at the apex tenax, *Blackb.*
BB. Pronotum not bearing a transverse series of 4 horns or spines.
C. Head not having horns near the base.
D. The extremities of the clypeal elevation not erected into horns.
E. The retuse area of the pronotum devoid of lateral elevations..... truncatum, *Blackb.*
EE. Retuse area of pronotum with lateral (or sublateral) elevations..... *ingens*, Macl.
DD. The extremities of the clypeal elevation erected into horns..... ..... frontale, *Guér.*
CC. Head armed with two horns between the eyes..... .... taurus, *Westw.*

Females.

A. The clypeal elevation and clypeal carinæ do not form angles at their points of contact..... proboscideum, *Schreib.*
AA. The clypeal elevation and clypeal carinæ form angles at their points of contact.
B. Clypeal elevations not having an angular projection in the middle.
C. Transverse carina of pronotum having a median tooth..... .... truncatum, *Blackb.*

CC. Transverse carina of pronotum not having a median tooth..... tenax, *Blackb.*
BB. Clypeal elevation furnished with a median angular projection..... taurus, *Westw.*

GROUP ii.

Second Subgroup (species having, in both sexes so far as known, an elongate transverse carina on the pronotum behind the middle).

Males.

A. Middle of transverse carina of pronotum projects as an angular process,..... Richardsæ, *Blackb.*
AA. Transverse carina of pronotum not, or scarcely, angular in middle.
B. One horn on each side of the retuse front of pronotum.
C. Two horns on front of clypeus..... laticorne, *Macl.*
CC. A single horn on front of clypeus..... chelyum, *Blackb.*
BB. Pronotum not having two horns.
C. An erect projection on front margin of pronotum..... Bainbridgei, *Westw.*
CC. The projection on pronotum is erect and rises from centre of retuse area..... .. recticorne, *Guér.*
CCC. The projection on pronotum is horizontal and springs from middle of front margin..... fissicorne, *Bainb.*

Females.

A. A single tubercle on front margin of pronotum... laticorne, *Macl.*
AA. No tubercle on front margin of pronotum..... chelyum, *Blackb.*
AAA. Two tubercles on (or close behind) front margin of pronotum.
B. Frontal elevation with two approximate strong tubercles placed one on each side of the middle line..... .. recticorne, *Guér.*
BB. Frontal elevation scarcely indicated..... fissicorne, *Bainb.*

GROUP iii.

A. Elytra normally striate.
B. 9th elytral stria not materially different from 10th..... ... gayndahensis, *Macl.*
BB. 9th elytral stria very much abbreviated in front.

C. Frontal carina in front of frontal wings not, or scarcely, shorter than front margin of frontal wings.
D. Retuse front of pronotum bearing a fine strongly impressed longitudinal median sulcus ..... Basedowi, *Blackb.*
DD. Retuse front of pronotum not longitudinally impressed ..... clypeale, *Blackb.*
CC. Frontal carina in front of frontal wings notably shorter than front margin of frontal wings.
D. Hind extremities of frontal margins not joined by a continuous transverse carina.
E. Left mandible (viewed from above) strongly and abruptly sinuate externally ..... mandibulare, *Blackb.*
EE. Left mandible (viewed from above) not, or scarcely, sinuate externally.
F. 14th elytral stria not confluent with 15th.
G. Hind femora conspicuously punctulate.
H. Eyes not perceptibly faceted.
I. Concavity on front part of pronotum cordiform .... Loweri, *Blackb.*
II. Concavity on front part of pronotum quadrate ..... fenestratum, *Blackb.*
HH. Eyes very distinctly faceted.
I. Pronotum with an excavation in front part and a longitudinal sulcus behind ..... fraternum, *Blackb.*
II. Pronotum evenly convex (the sublateral foveæ excepted) ..... nitidiceps, *Blackb.*
GG. Hind femora (except extreme front part) non-punctulate.
H. Pronotum with a transverse sulcus on either side..... lævipes, *Blackb.*
HH. Pronotum without transverse sulci..... subretusum, *Blackb.*

FF. 14th and 15th elytral striæ merge in front part into a single stria.	
G. No longitudinal sulcus on pronotum (elytral interstices strongly convex)...	nitens, *Blackb.*
GG. A well defined longitudinal sulcus on hind part of pronotum (elytral interstices notably less convex).	
H. Eyes not perceptibly faceted.	
I. Pronotum not, or scarcely, retuse in front part.....	rotundatum, *Hope*
II. Pronotum strongly and triangularly retuse in front part.....	impressicolle, *Blackb.*
HH. Eyes very distinctly faceted.	
I. Surface of pronotum, except median longitudinal line, scarcely punctured in middle of front part.	
J. Clypeal elevation scarcely angular in middle.....	rubescens, *Hope*
JJ. Clypeal elevation strongly angular in middle...	globuliforme, *Macl.*
II. Surface of pronotum thickly and strongly punctulate all across front part	obscurius, *Blackb.*
DD. Hind extremities of frontal margins connected by a transverse carina.....	carinatum, *Blackb.*
AA. Elytra with only 11 striæ.	
B. Front tibiæ with only 5 external teeth.....	simpliciceps, *Blackb.*
BB. Front tibiæ with 6 external teeth.....	planiceps, *Macl.*

B. ANGULICORNE, Macl.

I have two specimens sent to me from N. Queensland as male and female of the same Bolboceras (taken at the same place) of which the male is this species, and I have every reason to believe that the female is conspecific; only the male, however, of *angulicorne* has been described, and there is very little beyond circumstances of capture by which to apportion males and females

to each other. The male is readily distinguishable from all the other described males of the group having the hind tibiæ multicarinate (except *B. cavicolle*, Macl.), by its frontal horn having a tooth on its hind face slightly above the middle; and from *cavicolle*, *inter alia multa*, by its front tibiæ having only 5 external teeth. Its frons (which is represented by the front face of the frontal horn) and clypeus are entirely vertical, so that (the specimen being viewed from the side) the clypeal elevation is seen to project horizontally. The female referred to above has the upper outline of the retuse front of its pronotum, though perfectly well defined, yet less cariniform than in any other female Bolboceras known to me of this group; indeed, it is not strictly cariniform at all. This defined outline does not occupy transversely more than the middle one-third of the pronotum, but it is arched forward at its extremities and continues on either side of the retuse front almost to the front margin of the segment without becoming less clearly defined. The retuse front is extremely nitid, but bears sparse lightly impressed somewhat close and not particularly fine punctures. On the non-retuse part of the pronotum there is a median very coarsely punctulate wide longitudinal impression, on either side of which is a scarcely punctulate space, the rest of the surface, except close to the base, being closely punctulate (gradually more coarsely and less closely from the sides towards the middle. Its head does not differ noticeably from that of *B. rhinoceros*, Macl. (female). The striation of its elytra (as in the male) is feebler than that of *rhinoceros*, but the striæ are more conspicuously and less coarsely punctulate than in *B. rhinoceros* (as is also the case with the male).

B. Albertisi, Har.

I have not seen any specimen that I can attribute to this species, which is stated by its author to be remarkable by a longitudinal carina on the lower part of the front face of the frontal horn of its male. This character seems to me likely to be reliably specific, but I have before me specimens that do not differ from the description very widely in other respects. I have no unappro-

priated female that seems likely to be referable to it. The female was unknown to Harold. I feel no doubt but that it should be placed in the group with multicarinate hind tibiæ.

B. CAVICOLLE, Macl.

The author of this species was mistaken as to its female, which he says has a short unarmed frontal horn, and on either side of the retuse front of the pronotum a tubercle. These are all the particulars he supplies. I believe the specimen on which he founded the description to have been the male of another species. I have before me female examples of a Bolboceras which the circumstances of capture conclusively identify with this species. They can be at once separated from the females of all the other species known to me (of the group with multicarinate hind tibiæ) by the piece of the head which I have called the frontal wing being very much below the plane of the frons, the sides of which fall vertically to the inner end of the frontal wings, their lateral vertical face being quite half as high as the length of the frontal wings from their inner to their outer apex. The frontal elevation is much like that of *B. rhinoceros*, Macl. (female), in respect of height and the bifidity of its apex, but is more laminiform in shape owing to the presence of a carina connecting the apex of the frontal elevation with the apex of each of the two lateral areæ of the clypeus, which in this species (owing to the presence of an additional carina simulating a continuance of the clypeal elevation) appear to be distinct from and behind the clypeal elevation, and, in fact, not to be parts of the piece that I have called the clypeus. The pronotum has no tubercles on the sides of the retuse front, and differs very little from that of *B. rhinoceros*, except in the transverse carina above the retuse front being less strongly cariniform and much less extended laterally, and in the puncturation of the non-retuse parts being closer and more extended. The presence of a well-defined 6th external tooth on the front tibiæ is a conspicuous character of this species very unusual in this group of Bolbocerata. The sides of the pronotum are finely serrulate in both sexes.

B. Sloanei, Blackb.

This is the only species known to me having multicarinate hind tibiæ, the frontal horn of the male unarmed, and the frontal wings of the female normal, in which the front tibiæ have a well-defined 6th external tooth.

B. Reichei, Guér.

The female of this species must be regarded as undescribed, inasmuch as the description and figures supplied by Westwood are not sufficiently explicit to distinguish it from other female Bolbocerata. Westwood says that *B. Kirbii*, Bainbridge, is female *Reichei*, but does not state whether his own description of female *Reichei* is founded on Bainbridge's description (or specimen) or on an independent specimen in his own collection. When Bainbridge's description of *B. Kirbii* is referred to it is at once apparent that he has described two females (probably of two species) as male and female of his insect. I think it not unlikely that at least the example which he regarded as a male was the female of *Reichei*, but that cannot be regarded as more than probable, as Bainbridge himself does not associate it with male *Reichei*. The description itself is fairly explicit, but does not seem to me capable of being applied confidently to any Bolboceras in particular, for the numerous details given happen to be those which are common to nearly all the females of the group having multicarinate hind tibiæ. As *Kirbii* was a nom. præocc. in the genus, however, it is not of great importance to identify Bainbridge's insect. I have not myself seen any female Bolboceras that I can regard as being *Reichei*. I am afraid the matter can be cleared up only by a collector in some locality where *B. Reichei* occurs.

B. cornutum, Macl.

A male specimen in the S. A. Museum which was brought by the Calvert Expedition from N.W. Australia agrees very well with the description of this species. It has multicarinate hind tibiæ. It will be readily recognised by the characters indicated in my tabulation, which add some particulars to those furnished

by Macleay. The only remark Macleay makes on the female is that it has "a small bifid tubercle on the forehead and no tubercle on the thorax," which is the case with all its congeners of this group. I am disposed to think that *cornutum* is the male of *B. neglectum*, Westw. I have before me two females from the Port Essington region which (on account of their locality, size, colour and agreement with Westwood's unsatisfactory brief description) are probably Westwood's species. My reason for associating them with *B. cornutum* is that various other species of the Port Essington region extend their habitat to the parts traversed by the Calvert Expedition and from which *B. cornutum* was obtained, that they belong to the same group of Bolbocerata, and that they have in comparison with most of the other females of the group, as *cornutum* has in comparison with the males, a somewhat large portion of the pronotum devoid of puncturation. This is, of course, not sufficient evidence to justify the suppression of *cornutum* as a valid name without further investigation. The most conspicuous character of these females consists in the form of the retuse front of their pronotum, the floor of which is nearly flat, on a plane considerably lower than that of the adjacent parts, and with nearly straight limits laterally, the surface on either side of the retuse part dropping down to its level subvertically, so that the lateral limits of the retuse part have from a certain point of view the appearance of almost straight even furrows, each ending in front with one of the two deep round foveæ that in this group of Bolbocerata are observed on the front margin of the pronotum. The transverse carina of the pronotum is sinuous with its extremities bent (not forward but) hindward in a line that if continued would run into the middle of the sublateral fovea of the pronotum. The external outline of the left mandible, viewed from above, is scarcely sinuate.

B. HIPPOPUS, Macl.

Only the male of this species has been described hitherto. There is a male Bolboceras in the S. A. Museum and a female in my own collection which I have no hesitation in referring to it.

It is a member of the group with multicarinate hind tibiæ. The male is remarkable by the great length of its frontal horn, surpassing that of any other Bolboceras known to me; and also by the curious sculpture of the excavation of its pronotum, on the floor of which there is a sharply cut deep sulcus running from the front to behind the middle and causing the remainder of the excavated portion, when looked at obliquely from in front, to present a considerable resemblance in form to a horseshoe. Some other particulars regarding it are indicated by its place in the tabulation. The female that I pair with it is from the same locality and agrees with the male in size and colour, and also in two unusual characters, viz., the wide interval between the two foveæ on the front margin of the pronotum (which is more than twice as wide as the distance of either fovea from the lateral margin) and in the presence of a fovea within the humeral angle of the elytra, the angle itself being markedly less rounded off than in most Bolbocerata. The sculpture of the pronotum is throughout much like that of *B. angulicorne* (female) described above (except in the much greater distance from each other of the foveæ on the front margin); but the retuse space on the front is evidently wider and consequently more transverse, and has only very fine puncturation and a very small number of larger punctures in the extero-posterior portion, and the puncturation of the non-retuse portion of the surface does not increase so markedly in closeness and fineness from the middle towards the sides.

B. RHINOCEROS, Macl.

The male of this species has been recognisably described by its author, and somewhat fully by Harold. Neither of those authors, however, refers to its multicarinate hind tibiæ. Harold did not know the female, and Macleay's description of it does not distinguish it from the females of other species of the same group. I have before me several examples of the female, one of which was sent to me (along with a male) by the captor as being certainly conspecific with the male accompanying it. These females are extremely like the same sex of the species that I

regard as *B. neglectum*, Westw. (described above under *B. cornutum*, Macl.); indeed, the only definite character I can specify for distinguishing it from that insect is the presence of an extremely strong sinuation on the external margin of the left mandible and the somewhat greater distance towards the sublateral fovea of the pronotum, to which the extremity of the transverse carina of the pronotum is extended on either side. Male specimens differing from the ordinary form of this species in having the horns of the head and pronotum shorter—the latter, moreover, less compressed and at the apex not bifid—I regard as a variety.

B. NEGLECTUM, Westw.

Remarks on this insect will be found (above) under *B. cornutum*, Macl.

B. CORNIGERUM, Macl.

The male of this species is extremely close to that of *B. cavicolle*, Macl. Their author distinguishes the latter from the former by the presence of a tooth on the hind surface of the frontal horn. Varieties of the former, however, have a more or less defined tooth. *B. cavicolle* does not seem to be variable; its horn is comparatively short and laminiform with a very strong tooth (much stronger than in any *cornigerum* that I have seen), but there is a reliable distinction between the two species in the notably shorter and wider tibiæ of *cavicolle*. The females are so readily distinguishable by the structure of the frontal wings and other cephalic characters (see *B. cavicolle*, supra) that there can be no doubt of the validity of the species. The presence of a more or less distinct 6th external (the uppermost) tooth in both sexes on the front tibiæ of *cavicolle* is a distinctive character, but it must be noted that this tooth is in some examples feebly defined. As the female of *cornigerum* has not hitherto been recognisably described, I add some notes on it. It is very distinct from *cavicolle* by its frontal wings being on a plane continuous with that of the frons and by the absence of carinæ connecting the summit of the frontal elevation with the postero-external angles of the lateral clypeal areæ. The retuse front of its pronotum is wider

and is a flat surface, whereas in *cavicolle* the retuse area is somewhat concave owing to its defined upper outline being evidently protuberant in its whole length so as to slightly overhang the retuse area. In other respects I do not find any definite distinctive character on the pronotum, nor do the elytra differ in any notable manner from those of *cavicolle*. Of the females of the other species of the same group having the elytra similarly striate and the front tibiæ similarly toothed, *B. angulicorne*, Macl., differs by the presence of somewhat closely and evenly distributed large feeble punctures on the retuse front of the pronotum; *hippopus*, Macl., by the peculiar humeral angles of its elytra; and *rhinoceros*, Macl., and the species referred to above as probably *neglectum*, Westw., by the defined upper outline of the retuse front of their pronotum being bent backward at its extremities in such fashion that if continued in the same direction it would pass through the sublateral foveæ of the pronotum.

B. Tatei, Blackb.

The pilosity of the concave area on the front part of the pronotum renders the male of this species very distinct from the other described Australian Bolbocerata. It is also remarkable on account of the extraordinary development of its antennal club, the basal and apical joints of which are very strongly convex, with the result that the club is globular, and that its second joint is scarcely visible. The apical joint of the club is much larger and more convex than the basal joint.

B. Macleayi, sp.nov.

Mas. Latum, robustum; modice nitidum; supra glabrum; subtus hirsutum; rufo-piceum; mandibulo sinistro (superne viso) extus pone apicem fortiter sinuato; capite ante eminentiam frontalem confertim ruguloso, pone hanc nitido obsolete punctulato; fronte subhorizontali; eminentia frontali ut cornu simplex subrectum elevata; prothorace fortiter transverso, supra fere lævi (parte laterali utrinque confertim rugulosa excepta), antice area magna profunde concava impresso, parte concava antice cornu suberecto

utrinque armata (hoc late compresso ad apicem bifido), cornuum interspatio quam caput angustiori, margine antico profunde bifoveolato, lateribus vix perspicue serrulatis, angulis anticis vix prominentibus posticis nullis; scutello lævi; elytris sat fortiter 15-striatis, striis punctulatis (14ª 15ªque haud invicem commixtis) interstitiis planis tibiis anticis extus 5-dentatis, posticis transversim 4- vel 5-carinatis. Long. 9, lat. 5½ lin.

Femina a mari (ut supra scriptus) differt capitis et pronoti sculptura; capite crebre ruguloso eminentia clypeali tripartita, carinis quæ areas clypeales dividunt in eminentia clypeali late inter se distantibus; eminentia frontali ut cornu breve ad apicem bifidum erecta; pronoto antice retuso, area retusa minus nitida fere plana dupliciter (puncturis subtilibus cum aliis in medio et ad latera majoribus mixtis) punctulata, ceteris partibus triplo (in medio subtiliter sparsim haud rugulose, ad latera basinque confertim fortius rugulose, in sulco irregulari longitudinali mediano et in partibus sublateralibus haud ad basin extensis grossissime) punctulatis, area retusa postice carina trisinuata marginata. Long. 11, lat. 7 lin. (vix).

This is the only species known to me, of those having the hind tibiæ transversely multicarinate, in which the 14th and 15th elytral striæ do not coalesce; although they are contiguous near their front extremity they are (even at that part) distinctly *two* rows of punctures; in the other species of the group these striæ *coalesce* at the corresponding point and are there a single row of punctures. The male resembles that of *rhinoceros*, Macl., more closely than any other male known to me. It differs from *rhinoceros*, in respect of its head, by the frons being much less vertical; and, in respect of its pronotum, by the horns much wider (viewed from the side) and placed with their broad faces much less parallel to the centre line of the body, so that when viewed from behind the bifidity of both horns is visible, whereas when *rhinoceros* is viewed from behind the bifidity of the horns is not apparent; also, in respect of its pronotum, by the anterior excavation longitudinally (not convex but) concave between the horns, and by the same excavation not crossed in its middle part by a

sharply defined deep narrow sulcus. The female (as regards its distinctively female characters) resembles that of *rhinoceros* in the transverse carina that tops the retuse front being considerably prolonged laterally, and differs from the same by the much greater extension of the coarse puncturation on the pronotum and also by the finer of the two systems of puncturation on the retuse part being (on and beyond the lateral parts of the retuse front) very much less fine than it is in *rhinoceros*. The species differs (non-sexually) from *rhinoceros* by the character already cited in the elytral sculpture also by the elytral striation stronger and more conspicuously punctulate throughout; and by the base and lateral margins of the prothorax meeting in a narrower curve, so that there is more approach to an angle. The males of all the other species known to me (with hind tibiæ multicarinate transversely) have their prothoracic horns either much wider apart from each other or non-bifid at the apex. All the other females (of the same group) known to me have the transverse carina of their pronotum not trisinuate, or much less prolonged laterally, and the retuse front of their pronotum differently sculptured. I am not sure that the female of this insect is not identical with the female which Westwood described as that of *B. Reichei* (though his description is too brief for certainty), but I am quite satisfied that it is not the female of *B. Reichei*.

N. and N.W. Australia.

B. ARATUM, sp.nov.

Mas. Latum; robustum; sat nitidum; supra fere glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus pone apicem valde sinuato; capite ante eminentiam frontalem confertim ruguloso, pone hanc nitido obsolete punctulato; fronte subhorizontali; eminentia frontali ut cornu subrectum sparsim subtiliter pilosum elevata, hoc (a fronte viso) apicem versus dilatato et ad apicem bifido (a latere viso) apicem versus subulato; prothorace fortiter transverso, supra postice longitudinaliter sulcato, fere lævi (partibus lateralibus et sulco longitudinali postico inæqualiter varie punctulatis exceptis), antice area magna

profunde concava impresso, parte concava antice utrinque cornu compresso porrecto ad apicem subbifido armata (postice prope pronoti basin sulco recto valde elongato valde profundo transverso marginata), cornuum interspatio latitudine capitis latitudini æquali, margine antico profunde bifoveolato, lateribus sat fortiter serrulatis, angulis anticis vix prominentibus posticis nullis; scutello medio puncturis nonnullis impresso; elytris sat fortiter 15-punctulato-striatis, striis 14ª 15ªque antice confluentibus, interstitiis planis; tibiis anticis extus 5-dentatis, posticis transversim 4- vel 5-carinatis. Long. 10, lat. 7 lin.

Femina latet.

The most conspicuous character of this fine species is the extraordinary sulcus that runs across the pronotum near the base (almost at the hind limit of the large concavity which occupies the front two-thirds of the middle of the segment). This sulcus is very deep, sharply defined, and nearly straight, and extends on either side to within a short distance from the lateral margin. The nearest approach to this character in the other species known to me is in *B. rhinoceros*, Macl., but in that insect the transverse furrow is less sharply defined, much more arched, much shorter, and is placed slightly in front of the middle of the length of the pronotum. This species, in general characters, comes nearest to *rhinoceros*, differing from it, *inter alia*, by the shape of its frontal horn, the horns of its pronotum wider (viewed from the side) and less erect, and its frontal horn thinly clothed with long fine pilosity. The other species known to me (of this group) having the frontal horn pilose are *Sloanei*, Blackb.; *cornigerum*, Macl.; *cavicolle*, Macl., and *Reichei*, Guér. This Bolboceras was generously given to me by Mr. Froggatt.

N. Queensland (Charters Towers).

B. Bovilli, sp.nov.

Mas. Latum; sat nitidum; supra glabrum; subtus hirsutum, castaneum; mandibulo sinistro (superne viso) extus pone apicem fortiter sinuato; capite ante eminentiam frontalem confertim ruguloso; antennarum clava globosa (hujus articulis 1° 3°que

fortiter convexo, 3° quam 1^{us} multo majori) fronte sat verticali, eminentia frontali ut cornu simplex breve (hoc quam antennarum stipes vix longiori) elevata; prothorace fortiter transverso; supra in partibus antica mediana et postica lævi (in partibus lateralibus ruguloso—a latere versus medium gradatim magis grosse), antice area sat magna sat profunde concava impresso, parte concava ad latera cornu brevissimo conico (hoc quam cornu frontale plus quam duplo breviori) utrinque armata, cornuum interspatio quam caput angustiori, margine antico profunde bifoveolato, lateribus haud serrulatis, angulis anticis vix prominulis posticis nullis; scutello lævi; elytris sat fortiter 15-striatis, striis punctulatis (14^{a} 15^{a}que in parte antica conjunctis), interstitiis sat planis; tibiis anticis extus 5-dentatis, posticis transversim 4- vel 5-carinatis. Long. 6, lat. 4$\frac{1}{5}$ lin.

Femina latet.

This species is a pigmy among the Bolbocerata of its Group. It has the general appearance of being a very feebly developed specimen of *B. rhinoceros*, Macl., but differs from that insect in the absence of a transverse sulcus across the excavated portion (and of a coarsely punctured longitudinal depression on the hind part) of its pronotum, and in the form of its antennal club.

N. Territory of S. Australia (taken by the late Dr. Bovill).

The Second Group differs from the First by the structure of the hind tibiæ, which do not bear any transverse (or obliquely transverse) carinæ above the one (present in all the known Australian Bolbocerata) immediately preceding the apical sinuation of the tibia, the upper part of the surface bearing only small tubercles placed at, or close to, the lateral margins of its upper face; also by the absence of the two deep round foveæ (or holes) on the front margin of the pronotum. It differs from the Third Group by the carinæ dividing the clypeal areæ not meeting on the middle of the clypeal elevation, but being given off from (or near) the lateral extremities of the clypeal elevation and usually running more or less hindward instead of obliquely forward. The Group is readily divisible into two Subgroups, distinguished

from each other by the sculpture of the pronotum, which in the Second Subgroup bears in both sexes on its hinder half a carina extending (sinuously or not) in a curve (the general convexity of which is hindward) from, or from close to, the sublateral fovea on the one side to the corresponding part of the other side; while in the other Subgroup there is no such carina in either sex. I have placed the Subgroup in which this prothoracic carina is wanting before the other, because it contains numerous species in which the difference between the sexes is very much greater than in any species of the other Subgroup, and the most natural arrangement of the Australian Bolbocerata seems to be attained by regarding the degree of sexual difference and the size of the insects as the best index to the specific development; and by the arrangement proposed above we begin with the largest species having the strongest sexual characters (in the First Group), and find these characters and also the size gradually becoming enfeebled till in the Third Group we reach species smaller than in any other of the Groups, and in which the sexual differences are slight or almost wanting.

B. ARMIGERUM, Macl.

Only the male of this species has been described. I have seen several examples, all from N. Queensland, but no Bolboceras has come before my notice that seems likely to be its female.

B. TRITUBERCULATUM, Bainb.

The insect that Westwood figures as the female of this species evidently belongs to the First Subgroup of Group ii., while the male described by Bainbridge is a member of the Second Subgroup. This I regard as impossible to be correct, and therefore conclude that Westwood was mistaken in his identification. He gives no description, nor any reason for his identification; and his statement that the female was sent to him from Paris implies that his name for it was not founded on circumstances of capture. I have not seen any Bolboceras that appears likely to be that which he figured as the female.

B. LACUNOSUM, Macl.

Only the male of this species has been described. It was taken near Sydney, and is evidently a member of Group ii., but the description is too brief to enable me to place it in either Subgroup.

B. DENTICOLLE, Macl.

Taken by the Mitchell Expedition in the far North, is known only by the male. It is evidently a member of the First Subgroup of Group ii.

B. INGENS, Macl.

Is known only by a male example from the far North of W. Australia. I should judge it to be a member of the First Subgroup of Group ii.

B. QUADRICORNE, Klug.

I have not seen the original description of this species. Westwood, however, quotes Klug's description, which (as quoted by Westwood, who states that he has not seen the insect) appears to me to be identical with *B. serricolle*, Bainbridge, and Westwood states that *serricolle* is identical with *frontale*, Guér. Klug's description, it should be noted, is too brief for confident identification.

B. FISSICORNE, Bainb.

Is stated by Westwood to be a variety of the male of *B. recticorne*, Guér. (=*hastifer*, Bainb.). I am convinced that this is an error, and that Bainbridge's description was founded on the female of a species quite distinct from *recticorne*, of which I have both sexes before me. Its male differs from that of *recticorne* chiefly by the middle of the clypeal elevation being a horn which is (not erect but) directed obliquely forward, by the left mandible (viewed from above) having an extremely strong sinuation on its external margin, by the horn of its pronotum springing from immediately behind the front margin of the segment and projecting horizontally over the head, by the retuse part of the pronotum coarsely and deeply punctulate on its lateral parts, and by the much narrower and deeper excavation of the retuse front

of the pronotum on the part behind the horn. The female (to which Bainbridge gave the name) differs from that of *recticorne* (which it closely resembles) chiefly by its frontal elevation scarcely defined and not having two approximated tubercles one on either side of its middle, and by the strong sinuation of the external margin of its left mandible (viewed from above).

B. RECTICORNE, Guér.

As far as I can ascertain no description of the female of this species has been published. In common with the other species of the same Subgroup, the female differs from the male much less widely than do the females of species belonging to the First Group and the First Subgroup of the Second Group. It is, however, readily distinguished from its male by the presence of a distinct frontal elevation in the form of a carina which bears two approximate tubercles, one on either side of the middle, by the middle of its clypeal elevation being a small tubercle instead of a short stout horn, by the absence of the upright horn in the centre of the retuse front of the pronotum, and by the presence of two approximate tubercles immediately behind the middle part of the front margin of the pronotum.

B. TENAX, sp.nov.

Mas. Latum, robustum; sat nitidum; supra glabrum; subtus hirsutum; rufum vel rufopiceum; mandibulo sinistro (superne viso) extus vix sinuato; capite (parte postica excepta) sat crebre sat rugulose punctulato; clypeo antice verticali; eminentia clypeali simplici, fere semicirculari (adversus clypeum viso); fronte (a latere viso) sat horizontali; eminentia frontali ut cornu modicum (hoc ad apicem breviter bifido) elevata; prothorace quam longiori fere duplo latiori, supra subtilissime sat æqualiter et acervatim sat grosse punctulato, antice inæqualiter retuso cornubus 4 serie transversa armato (cornubus intermediis porrectis compressis contortis, externis spiniformibus divaricatis), parte pone cornua intermedia foveis 2 magnis maxime profundis impressa, lateribus vix perspicue serrulatis, angulis anticis mucronatis valde prominentibus posticis nullis; scutello lævi; elytris 15-striatis, striis

punctulatis (14ª 15ªque antice contiguis sed vix inter se plane commixtis), interstitiis planis; tibiis anticis extus 6-dentatis, posticis supra carinam apicalem transversim 1-carinatis et hinc sursum duplici serie tuberculatis.

Femina a mari (ut supra scriptus) differt capitis et pronoti sculptura; capitis sculptura a *B. Macleayi* (fem.) vix differt sed puncturis magis subtilibus, eminentia frontali bifida magis lata minus elevata; pronoto fere ut maris punctulato supra sat æquali (parte antica retusa minus alta excepta), hac carina transversa antrorsum arcuata quam capitis latitudo longiori supra marginata, angulis anticis haud mucronatis. Long. 9, lat. 5½ lin.

The male of this species is extremely different from those of all the other described Bolbocerata except *armigerum*, Macl., which latter species it resembles considerably, but differs in respect of its head, *inter alia*, by the frontal elevation being a single horn feebly bifid at the apex, and in respect of the pronotum, by the intermediate horns being of a twisted shape difficult to describe exactly (they are convergent at the apex), and by the foveæ behind the intermediate horns being very much deeper.

The female can be at once separated from all the other described females of the genus by the retuse front of its pronotum margined behind by an arched carina, the convexity of which *is directed forward*, but I have before me other female Bolbocerata (of which I do not know the males) which present the same character. The female of *B. tenax* differs from one of them (which I suspect of being the female of *B. ingens*, Macl., by the transverse carina of the pronotum being extended laterally beyond the width of the head, from another by the upper outline of the subvertical clypeus (viewed from in front) being truncate instead of roundly arched, and from yet another by the left mandible (viewed from above) being scarcely sinuate instead of strongly emarginate. Both sexes of this species differ from *B. armigerum*, Macl., by their front tibiæ having only 5 external teeth. I have examined several specimens of both sexes (in my collection and that of the S. Australian Museum) and do not find the species variable.

S. Australia.

B. Froggatti, sp.nov.

Mas. Latum; robustum; sat nitidum; supra glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite (partibus extero-posticis exceptis) confertim ruguloso; clypeo antice verticali; eminentia clypeali in medio ut cornu breve obtusum elevata, ab hoc utrinque ut carina retrorsum oblique ad marginem frontalem continua, cum hoc ut tuberculus conicus utrinque conjuncta; eminentia frontali nulla; capitis parte extero-postica utrinque concava fere lævi; prothorace fere ut præcedentis (*B. tenacis*, Blackb.) sed cornubus intermediis magis latis magis parallelis magis porrectis et inter se magis distantibus et parte postica linea longitudinali impressa; scutello lævi; elytris ut *B. tenacis;* tibiis anticis (exempli typici) carentibus; tibiis posticis ut *B. tenacis.* Long. 11, lat. $7\frac{2}{3}$ lin.

This is another ally of *B. armigerum*, Macl., from which (and from *B. tenax*, Blackb.) it differs by its *clypeal* (not frontal) elevation being raised into a horn, the horn, moreover, being a simple conical elevation like an exaggerated tubercle. The pronotum agrees with that of each of the abovenamed species in having 4 horns placed more or less transversely, but differs by its intermediate horns being parallel, very widely compressed (much like the horns of *B. laticorne*, Macl.) and placed so as to project straight forward; in *armigerum* they are curved somewhat downward, and in *tenax* somewhat upward. It is very much larger than any example that I have seen of either *armigerum* or *tenax*. The unique specimen was given to me by Mr. Froggatt.

N. Queensland.

B. truncatum, sp.nov.

Mas. Latum; robustum; sat nitidum; supra glabrum; subtus hirsutum; rufrobrunneum; mandibulo sinistro (superne viso) extus fortiter sinuato; càpite antice creberrime (postice paulo minus crebre) subtilius punctulato vel ruguloso, clypeo antice verticali; eminentia clypeali ut lamina vel cornu breve laminiforme elevatum; eminentia frontali nulla; oculis nonnihil granulatis; prothorace fortiter transverso, supra tripliciter (sc. crebre subtiliter,

ad latera creberrime subtilius rugulose, medium versus grosse acervatim) punctulato, antice alte latissime retuso, parte retusa obsolete inæquali supra carina arcuata marginata (hac antrorsum curvata et in medio leviter obtuse prominenti), parte postica vix longitudinaliter in medio impressa sed utrinque versus marginem lateralem (hoc fortiter serrulato) sulco lævi longitudinali valde profundo impressa; angulis anticis sat prominentibus (nullo modo mucronatis) posticis rotundatis; scutello subtiliter subcrebre punctulato; elytris 15-punctulato-striatis (striis 14ª 15ªque nullo modo inter se commixtis, 9ª 10ª vix dispari), interstitiis planis; tibiis fere ut *B. tenacis*, Blackb., sed anticis extus 5-dentatis.

Femina a mari (ut supra scriptus) differt capitis et pronoti sculptura; capitis sculptura a *B. Macleayi*, Blackb., (fem.) haud multo differt, sed puncturis magis subtilibus; pronoto fere ut maris punctulato, parte retusa multo minus alta minus lata, sulcis longitudinalibus lateralibus carentibus. Long. 9-11, lat. $6\frac{1}{2}$-$7\frac{1}{4}$ lin.

This species does not much resemble any other that has been described except *B. ingens*, Macl., and possibly *B. lacunosum*, Macl. The former is insufficiently described, scarcely anything but the sexual characters of the male being mentioned, but I note that among those the "forehead" is said to be "vertical and slightly retuse," and the retuse area of the pronotum is said to "show three excavated surfaces, the middle one of which is of crescentic form," and to have "a prominent protuberance on each side," while the thorax is said to be three times wider than long (much less than twice as wide as long in *B. truncatum*). The above characters all point to strongly defined differences between the two species. *B. truncatum* (male) has so wide a retuse area on the front part of its pronotum that the insect has the appearance of the front half of its pronotum having been sliced off. The peculiar, somewhat tuberculiform, prominence (distinct, though less strong, in the female) in the middle of the carina that tops the retuse area of the pronotum distinguishes this species from all the others (known to me) having a carina arched forward at the top of the retuse area. *B. lacunosum*, Macl., is

not very clearly described, its "peculiarity" being said to be its "horizontally placed thorax," &c., but it is evidently not the present species, because, *inter alia*, it is said to have a "small horn on the front of the excavation of its prothorax." I owe this species also to the generosity of Mr. Froggatt, and have seen it also in the collection of Mr. Griffith.

N. Queensland.

The remaining species known to me form the Third Group of the Australian Bolbocerata; the distinctive characters common to them and distinguishing them from the species of the other groups have already been discussed under the heading of the Second Group.

B. CLYPEALE, sp.nov.

Fem.(?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; rufobrunneum, mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., sed fronte parum concava marginibus frontalibus ante alas frontales elongatis (quam alæ sublongioribus), fortiter convergentibus, eminentia frontali ut tubercula 2 (his carina leviter inter se connexis) elevata; prothorace fortiter transverso, supra acervatim subfortiter sat sparsim punctulato, antice retuso (parte retusa magna concava nonnihil cordiformi), postice sulco mediano longitudinali leviter impresso; scutello sat crebre sat æqualiter leviter punctulato; elytris fere ut *B. mandibularis* sed striis 14ª 15ªque antice ut punctura subtilissimæ impressis; femoribus tibiisque ut *B. mandibularis*. Long. 5, lat. 3 lin.

This species differs from all its congeners known to me (except *B. Basedowi*, Blackb.) of the Third Group by the great elongation of the portion of its frontal margins in front of the frontal wings. The distance from the point where the frontal margin on either side is in contact with the front margin of the frontal wings to that where the frontal margin meets the clypeal elevation is slightly greater than the distance from the former of those points to the external margin of the frontal wing and the frontal margins (instead of being nearly parallel with each other as in other species) are quite strongly oblique forward so as to be much

nearer to each other in front than at their base. The extremities of the clypeal elevation as well as its middle are quite strongly upturned, so that (especially when looked at obliquely from behind) it appears trituberculate (as in the species I have called *B. globuliforme*, Macl. ?). The frontal elevation, consisting of two strong tubercles joined by a scarcely raised carina, resembles that of *B. lævipes*, Blackb. Its prothoracic concavity is not unlike that of *B. Loweri*, Blackb., but is much larger, especially wider. The extero-front angle of the clypeal wings is a little better defined than in *B. mandibulare*.

N. Queensland (Mr. Koebele).

B. Basedowi, sp.nov.

Femina(?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; obscure piceo-rufum; mandibulo sinistro(superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb. (ejusdem sexus) sed marginibus frontalibus ante alas frontales elongatis (quam alæ vix brevioribus) sat convergentibus, alarum frontalium angulis extero-anticis minus rotundatis; prothorace fortiter transverso, supra (partibus lateralibus sat crebre minus acervatim punctulatis exceptis) fere lævi, antice retuso (parte retusa sat triangulari in medio longitudinaliter linea profunde impressa) utrinque supra partem retusam fovea sat brevi oblique leviter impresso, parte postica æqualiter convexa; scutello lævi; elytra subtiliter 15-punctulato-striatis, striis 14ª 15ªque haud inter se confluentibus (9ª antice abbreviata) interstitiis planis; femoribus posticis sparsim sat fortiter punctulatis; tibiis anticis extus 5-dentatis. Long. $5\frac{1}{2}$, lat. $3\frac{2}{5}$ lin.

One of the largest species of the Third Group. Easily distinguishable from all the other species known to me of the group (except *B. clypeale*, Blackb.) by its elongate and strongly convergent frontal margins. From *B. clypeale* it is very distinct by, *inter alia*, the entirely different sculpture of the retuse front of its pronotum. It was brought by the Wells Expedition (probably from the Musgrave Ranges or thereabouts) and is in the S.A. Museum.

Central Australia (Mr. Basedow).

B. MANDIBULARE, sp.nov.

Mas (?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus fortiter sinuato; capite (parte postica excepta) sat crebre subrugulose minus subtiliter punctulato, fronte concava postice minus crebre punctulata; eminentia clypeali in medio tuberculum ferenti, ab hoc utrinque ut carina retrorsum oblique ad marginem frontalem continua; carinis quæ areas clypeales dividunt ab tuberculo frontali ad clypei marginis anterioris extremitates continuis; marginibus frontalibus ante alas frontales brevibus (quam alæ multo brevioribus) alarum frontalium angulis extero-anticis rotundatis; eminentia frontali ut carina brevis transversa (hac leviter retrorsum arcuata, ad extremitates vix prominenti) sat fortiter elevata; capitis margine modice perspicuo, oculum medium vix attingenti; oculis perlævibus; prothorace fortiter transverso, supra acervatim sat grosse punctulato, pone marginem anticum fovea magna ovali vel subcirculari impressa, pone medium longitudinaliter sulcato, partium impressarum fundo sat fortiter punctulato, pronoti puncturis latera versus sat crebris (hinc versus partem medianam et prope basin minus numerosis); scutello subtilius sat crebre sat æqualiter punctulato; elytris sat fortiter 15-punctulato-striatis, striis 14ª 15ª que haud inter se confluentibus, interstitiis parum convexis; tibiis posticis supra carinam 2ªm haud transversim carinatis, anticis extus 6-dentatis; femoribus posticis subtus crebre æqualiter minus subtiliter punctulatis.

Feminæ (?) fronte minus concava, creberrime sat æqualiter punctulata. Long. 5, lat. 3 lines.

This species, although comparatively large in the Third Group, is much smaller than any species known to me of the First or Second Groups. It differs from all the other species known to me (of the same group) by its left mandible (viewed from above) having an extremely strong external sinuation. It is the only species of the group that I know to occur in New South Wales, whence four specimens were sent to me by Mr. T. G. Sloane, and I have

seen another example (also from New South Wales) in Mr. Jung's collection. I can find no character likely to be sexual except that of the frons in one of my specimens being less concave and much more closely punctured than in the other examples. I have described the sculpture of the head of this species at full length; but as the general character of the sculpture of the head is very uniform throughout the Third Group it seems to me unnecessary to repeat the full description, and I purpose therefore, in dealing with the following species, to confine myself to stating those characters in respect of which their heads are sculptured differently from the above description. Except in respect of the supposed sexual difference noted above, the specimens before me show very little variation *inter se;* there is, however, a certain amount of variation in the shape of the concavity on the pronotum, which, in some examples, is nearly circular, and in others more or less oval.

N. S. Wales.

B. GAYNDAHENSE, Macl.

I possess two specimens which I attribute to this species, and have seen another in Mr. Griffith's collection. Some years ago I compared one of my own specimens with the type and considered it identical, but I hesitate to attach any certainty to the determination, as at the time I made it I had not studied the genus sufficiently to justify my feeling sure that I may not have overlooked some character that called for attention. Every worker on the Coleoptera is, of course, aware that the results of a comparison among closely allied species is unreliable unless the person who makes it has the particular characters that require attention accurately in his mind. Nevertheless, in this case, I believe my determination was right, as (in addition to the apparent identity) the circumstances of capture pointed to the probability of my specimen being *gayndahense.* It agrees with Macleay's description (such as it is), but that alone would certainly not be conclusive. The species is the largest known to me of Group iii. (long. $5\frac{1}{2}$ l.), and is distinguishable from all the others known to me of the same group by the 9th stria of the elytra

scarcely different from (*i.e.*, only very slightly shorter and not at all less strongly defined than) the 10th, that stria in the other species being almost non-existent in at least the front one-quarter of its length.

B. Loweri, sp.nov.

Mas (?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus fere æqualiter curvato; capite fere ut *B. mandibularis*, Blackb., sed eminentia frontali paulo magis arcuata; prothorace fere ut *B. mandibularis*, sed parte mediana concava plus minusve cordiformi, parte postica longitudinaliter minus fortiter impressa; scutello ut *B. mandibularis;* elytra fere ut *B. mandibularis* sed striis magis subtiliter magis crebre punctulatis (9ª antice obsoleta); pedibus ut *B. mandibularis*.

Feminæ (?) fronte minus concava, creberrime sat æqualiter punctulata; eminentia clypeali in media vix tuberculata. Long. 5, lat. $3\frac{3}{5}$ lin.

Nearest to *B. gayndahense*, Macl., but quite distinct from that species by its 9th elytral stria obsolete in the front one-quarter of its length. It also differs by the other characters noted above and by the lines connecting the tubercle of the clypeal elevation with the frontal margins being less oblique, so that they meet at the tubercle in a more obtuse open angle. The concavity of the pronotum is less notably cordiform in the specimen that I take to be a female than in the other, but this difference is probably varietal rather than sexual.

N. Queensland (Messrs. Lower and Koebele).

B. fenestratum, Blackb.

This species is somewhat closely allied to *B. Loweri*, Blackb., from which, however, it is readily distinguishable by the quadrate form of the concavity on its pronotum and by the very much coarser puncturation of the lateral parts of that segment, as well as by its smaller size. I have seen numerous examples from the Port Essington region, but not any from elsewhere.

B. NITIDICEPS, sp.nov.

Mas (?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus sat pilosum; testaceo-brunneum, capite pronotoque rufescentibus; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., sed toto supra nitidissimo sparsissime (in clypeo sat grosse, in ceteris partibus subtilius) punctulato, eminentia frontali antrorsum arcuata, oculis perspicue subtiliter asperis; prothorace fortiter transverso, supra æquali (foveis sublateralibus exceptis), sparsim acervatim punctulato; scutello fere lævi; elytris subtilius 15-punctulato-striatis, striis 14 15^a que haud inter se confluentibus (9^a antice fortiter abbreviata), interstitiis sat planis; femoribus posticis sparsim punctulatis; tibiis ut *B. mandibularis*, Blackb. Long. $3\frac{3}{4}$, lat. $2\frac{1}{2}$ lin.

The unique type of this species stands alone among the species known to me of the Third Group in its frontal elevation being an arched carina with its convexity on the front side. The importance of this character is discounted, however, by the fact that in the few species of which I have seen numerous examples, the frontal elevation is more or less variable, being in some examples straight and in others arched, with the convexity of the arch hindward. But, that character being disregarded, the species is still a very distinct one by virtue of its pronotum evenly convex (apart from the sublateral foveæ, which are present in all the Australian Bolbocerata), and its head notably more nitid and more sparsely punctulate than that of any other of the species (of the group) in which the 14th and 15th elytral striæ are not confluent in front. The hind femora bear puncturation differing from that of the preceding four species in being very much less close, especially immediately in front of the series of setiferous punctures. Another distinctive feature consists in the extreme shortness of that portion of the frontal margin which is in front of the frontal wings, it being scarcely one-third of the length of the front outline of the frontal wings, whereas in the preceding 4 species it is half the length of that outline.

N. Queensland (sent by the late Mr. E. Cowley).

B. LÆVIPES, sp.nov.

Mas (?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus sat hirsutum; testaceo-brunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., (maris) sed fronte minus concava confertim subtilius æqualiter punctulata, marginibus frontalibus ante alas frontales sat brevioribus, alarum frontalium angulis extero-anticis sat bene definitis, eminentia frontali tuberculis 2 parvis (his inter se vix carina conjunctis) formata; prothorace fortiter transverso, latera versus crebre (in aliis partibus—parte mediana longitudinali excepta—lævi) punctulato, antice oblique subretuso, parte retusa in media longitudinaliter (et latera versus transversim profunde sulcata; scutello fere lævi; elytris sat fortiter 15-punctulato-striatis, striis 14^a 15^aque haud inter se confluentibus, 9^a antice abbreviata, interstitiis sat planis; femoribus posticis subtus (parte antica summa excepta) lævibus; tibiis ut *B. mandibularis*. Long. 4, lat. $2\frac{1}{2}$ lin.

The most conspicuous character of this species is the peculiar sculpture of its pronotum. The front part of the segment is obliquely slightly retuse; from the middle of the summit of the declivity three deep sulci proceed (they do not, however, quite meet at the summit), one of them longitudinally to the front margin of the pronotum, one on each side towards the lateral margin (widening out and becoming obsolete, however, and so not reaching the lateral margin). It is quite probable that in the other sex this sculpture is at least enfeebled, but disregarding it the insect is extremely distinct from all the preceding (of the Third Group) by the well-defined extero-front angles of its frontal wings and by its hind femora quite punctureless between their extreme front margin and the row of setiferous punctures near the hind margin.

N.W. Australia (Mr. F. Bishop).

B. FRATERNUM, sp.nov.

Mas (?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; testaceo- vel rufobrunneum; mandibulo sinistro

(superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., sed oculis manifeste granulatis; prothorace ut *B. mandibularis*; scutello inæqualiter subfortiter punctulato; elytris sat fortiter 15-punctulato-striatis, striis 14ª 15ªque haud inter se confluentibus; interstitiis basin versus leviter convexis; femoribus posticis (parte antica summa sat crebre punctulata excepta) subtus sparsim subgrosse punctulatis; tibiis ut *B. mandibularis*.

Feminæ (?) fronte paullo minus concava. Long. $3\frac{1}{5}$-4, lat. $2\frac{1}{5}$-$2\frac{1}{2}$ lin.

This species closely resembles *B. mandibulare*, Blackb., but differs from it by very much smaller size, left mandible scarcely sinuate externally, eyes quite evidently faceted and hind femora less closely and less conspicuously punctulate on the area between the row of setiferous punctures and the near neighbourhood of the front margin. There are before me five specimens taken by the Calvert Expedition, and I possess two in my own collection also from the far North of W. Australia. Two of them are much smaller than the others, and have evidently less close clypeal puncturation; these I take to be males, though, if so, the sexual differences in this species are unusually feebly marked.

N. W. Australia.

B. SUBRETUSUM, sp.nov.

Mas (?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., sed carina frontali transversa breviori nec arcuata, capitis margine magis definito fere ad oculi marginem anticum continuo; oculis manifeste granulatis; prothorace fortiter transverso, supra acervatim sat grosse punctulato, pone marginem anticum retuso, supra partem retusam obtuse leviter bifido (parte retusa subinæquali sparsim sat fortiter punctulata), pone medium longitudinaliter leviter impresso: scutello sparsim punctulato; elytris ut *B. mandibularis*, Blackb.; femoribus posticis (parte antica summa excepta) lævibus; tibiis ut *B. mandibularis*.

Feminæ (?) fronte minus concava, creberrime sat æqualiter punctulata. Long. $4\frac{1}{2}$-5, lat. $2\frac{4}{5}$-$3\frac{1}{5}$ lin.

This species is distinguished from all its immediate allies by the front part of its pronotum very conspicuously retuse, with the middle of the retuse front topped by a distinctly bifid obtuse (but by no means strongly prominent) protuberance. It differs from all the preceding species (except *B. lævipes*, Blackb.) also by the punctureless surface (excepting the extreme front and the row of setiferous punctures) of its hind femora; and from *B. lævipes* by, *inter alia*, the extero-front angles of the frontal wings quite rounded off, its frontal elevation consisting of a short transverse carina, its pronotum more closely punctulate in the neighbourhood of the front angles and the 14th and 15th striæ of its elytra very evidently better defined in their front part (*i.e.*, not becoming mere rows of subobsolete punctures).

N.W. Australia.

B. NITENS, sp.nov.

Fem.(?). Breve; subrotundatum; nitidum; supra glabrum; subtus hirsutum; obscure rufobrunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb. (feminæ ?), sed fronte magis plana minus subtiliter punctulata, eminentia frontali ut carina arcuata perbrevis elevata; oculis manifeste granulatis; prothorace fortiter transverso, supra æquali (foveis sublateralibus exceptis), latera versus (et postice in medio sparsissime) acervatim inæqualiter punctulato; scutello lævi; elytris fortiter 15-punctulato-striatis, striis 14ª 15ªque antice confluentibus, interstitiis sat angustis manifeste convexis; femoribus posticis subtus fortiter sparsim punctulatis; tibiis (exempli typici) carentibus. Long. $4\frac{2}{3}$, lat. $2\frac{1}{2}$ lin.

Differs from all the preceding species (of this Group) by the 14th and 15th striæ of its elytra coalescing at a distance from their base of about one-sixth of the length of the elytra and being thence to the base a single row of punctures which are not smaller nor less strongly impressed than in the hinder portion of their length. This species is exceptionally nitid among its congeners of the Third Group, and its elytral interstices are exceptionally narrow and convex. I conjecture it to be of the sex that I regard as the female, on account of its frons being scarcely

at all concave. The unique type has unfortunately lost its tibiæ, but it is very unlikely that they were materially different from those of *B. mandibulare*, Blackb. The frontal margins are (in front of the frontal wings) as short as in *B. nitidiceps*, Blackb.

N. Queensland (sent by the late Mr. Cowley).

B. ROTUNDATUM, Hope.

I have, in my collection, specimens from the Port Essington region which I have no doubt are this species. Their front tibiæ have the 6th (uppermost) external tooth either wanting or very nearly so. The 14th and 15th elytral striæ are confluent in their front portion, the eyes not visibly faceted. The pronotum is longitudinally impressed along the middle, but otherwise devoid of inequalities (except the sublateral foveæ). The front part of the frontal margins is as in *nitens*, Blackb., and *nitidiceps*, Blackb. The hind femora are strongly but not closely punctulate. The difference between the sexes is slight, and of the same kind as in *B. mandibulare*, Blackb.

B. RUBESCENS, Hope.

I have a single specimen from the Port Essington region which I conjecture to be this species. If I am right in my identification it is, I think, distinct from *B. rotundatum*, Hope, though (as Westwood says) extremely close to it. Besides the slight differences noted by Westwood (which, if they were all, I should not consider specific), its eyes are visibly faceted, its clypeal elevation is scarcely tuberculate in the middle, and the carinæ connecting the quasi-tubercle with the extremities of the frontal margins are evidently less oblique, so that they scarcely form an angle at their point of contact with each other.

B. IMPRESSICOLLE, sp.nov.

Mas (?). Breve; subrotundatum; nitidum; supra glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., maris, sed fronte pernitida sparsim punctulata, eminentia frontali

ut carina brevissima transversa elevata; prothorace fortiter transverso, supra sparsim acervatim punctulato, antice retuso (parte antica pernitida—a fronte visa—triangulari), postice longitudinaliter profunde sulcato; scutello subtilius punctulato; elytris subtilius 15-punctulato-striatis, striis 14ª 15ªque antice inter se confluentibus (9ª antice fortiter abbreviata), interstitiis planis; femoribus posticis subtus (parte antica summa excepta) sparsissime punctulatis; tibiis ut *B. mandibularis*, Blackb. Long. 4, lat. $2\frac{3}{5}$ lin.

The conspicuous characters of this species are the very sparse puncturation of its frons, the extremely short transverse carina which forms its frontal elevation, and the abruptly retuse front of its pronotum, the retuse area (looked at from in front) presenting a triangular face. These characters in combination readily distinguish it from all the other species of the Group having the 14th and 15th elytral striæ coalescent in front. No part of the frons is so closely punctulate as the part of the head behind the frontal elevation.

N.W. Australia (Roebuck Bay).

B. GLOBULIFORME, Macl.

I am not very confident in my identification of this species. The only characters mentioned by its author that seem likely to be specific are the prothorax being "almost free from punctures, a few distant and very fine ones being scattered over it," and the prothorax of the male being "slightly retuse in front." I have a number of Bolbocerata from localities neighbouring to Port Denison (the habitat cited) which seem likely to be *globuliforme*, but although their pronotum is less closely punctulate than is usual in the Third Group, it is not so nearly punctureless as Macleay's description indicates. I note that Macleay regards the specimens with the frons less concave as males, which is not my opinion of them, but I admit that the matter is open to doubt. The species before me belongs to the aggregate having the 14th and 15th elytral striæ confluent in front, and its eyes are visibly (though feebly) faceted. Its elytral interstices are feebly sub-

convex (notably less flat than in *B. impressicolle*, Blackb.). The pronotum is slightly or scarcely less retuse in front, more so in some specimens than in others, but this seems to me a matter of variation rather than sex (which is not Macleay's opinion). The subretuse portion is more or less distinctly impressed down the middle, and its lateral part on either side is separated from the extreme front margin of the pronotum by a somewhat conspicuous transverse furrow. The undersurface of the hind femora is very sparsely punctulate, and the front tibiæ are 6-dentate externally. The frons in one sex is extremely sparsely (as sparsely as in *impressicolle*, Blackb.), and in the other somewhat closely, punctulate. In both sexes the clypeal elevation has a strong tubercle in the middle and another at each extremity (*i.e.*, where it meets the frontal margin).

B. OBSCURIUS, sp.nov.

Fem.(?). Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; rufobrunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb. (fem. ?) sed eminentia clypeali vix tuberculata, eminentia frontali tuberculiformi, oculis manifeste granulatis; prothorace fortiter transverso, supra minus sparsim minus acervatim (partibus posticis et postico-medianis sat sparsim) punctulato. longitudinaliter (antice leviter, postice valde profunde) impresso, antice subretuso (parte retusa minus nitida dupliciter punctulata, sc. subtiliter et fortiter); scutello subtiliter punctulato; elytris fortius 15-punctulato-striatis, striis 14ª 15ªque antice inter se confluentibus (9ª antice fortiter abbreviata), interstitiis leviter subconvexis; femoribus posticis subtus sparsim punctulatis; tibiis fere ut *B. mandibularis* sed anticarum dente 6° externo vix perspicuo. Long. 4, lat. $2\frac{3}{5}$ lin.

The most conspicuous characters of this species are the close even puncturation of the whole upper surface of the head (probably different in the other sex), which is similar to that of the most closely punctured part of the head of the preceding sp. (*B.*

globuliforme, Macl.?), and the conspicuous puncturation (large and fine punctures intermingled) which extends all across (but in a somewhat acervate manner) the retuse front face of the pronotum. The part of the frontal margin in front of the frontal wings is (as in *B. globuliforme*, Macl., *nitens*, Blackb., &c.) very short.

N. Queensland (sent by the late Mr. Cowley).

B. CARINATUM, sp.nov.

Breve; subrotundatum; sat nitidum; supra glabrum; subtus hirsutum; rufo-brunneum; mandibulo sinistro (superne viso) extus vix sinuato; capite fere ut *B. mandibularis*, Blackb., sed eminentia frontali marginum frontalium extremitates posticas conjungenti, capitis margine utrinque magis elevato; prothorace fortiter transverso, supra æquali (foveis sublateralibus exceptis), minus acervatim minus sparsim (a partibus lateralibus et anticis retrorsum et medium versus gradatim magis sparsim) sat fortiter punctulato; scutello vix vel subobsolete punctulato; elytris sat fortiter 15-punctulato-striatis, striis 14ª 15ªque haud (vel antice vix) inter se confluentibus (9ª antice abbreviata), interstitiis planis vel vix subconvexis, femoribus posticis subtus sat crebre punctulatis, tibiis anticis extus 7-denticulatis. Long. 4-5, lat. $2\frac{1}{2}$-3 lin.

This species is readily distinguishable from all the others known to me of the Third Group by its frontal elevation being an elongate carina reaching the hind extremity of the frontal margin on either side, so that the frons is margined in every part by a well-defined cariniform outline. I have seen enough specimens (14, mostly taken by the Calvert Expedition) to justify the opinion that both sexes are represented, but there is very little difference that seems likely to be sexual. About 6 of the specimens are considerably smaller than the rest and of lighter colour, with their pronotum a little more punctulate; I take these specimens to be of sex different from the others. The presence of 7 distinct external teeth on the front tibiæ is an unusual character.

N.W. Australia.

ADDITIONAL NOTE.

The following names are those of the described Australian species of Bolboceras not discussed or tabulated in the preceding pages. The insects are not known to me, and the descriptions of them do not furnish the particulars required for placing them in a tabulation :—

B. CAPREOLUS, Westw.

Presumably a member of the Second Subgroup of my Second Group. A very conspicuous species (from W. Australia), its male having a cephalic horn, the apex of which is divided into six projections.

B. LACUNOSUM, Macl.

(From Sydney). Probably a member of my Second Group, but it seems doubtful in which Subgroup it should be placed. My conjecture is that its nearest ally is *B. Richardsœ*, Blackb., from which it differs, *inter alia*, by there being no projection on the head of the male.

B. TRITUBERCULATUM, Bainb.

This species also seems to fall in my Second Group, and probably in the Second Subgroup. It is from W. Australia. Its male is described and figured as having three large tubercles placed triangularly in the centre of the retuse area of its pronotum.

B. SWEERI, Macl.

A small species appertaining to my Third Group. It might be any one of numerous species that I have described, and could not be identified without examination of the type. It is from Sweer's Island.

B. CORNICULATUM, Westw.

Evidently a very remarkable and isolated species. I cannot place it in any Group. It is of very small size (long, 3 lines), with (in the male) two horns on the head and two on the pronotum. Its habitat is W. Australia.

APPENDIX.

After the preceding pages had been forwarded to the Linnean Society, a very interesting undescribed species of Bolboceras came before my notice in the S.A. Museum. It is described below:—

B. PONTIFERUM, sp.nov.

Mas. Latum; breve; sat nitidum; supra glabrum; subtus hirsutum; rufum; capite rugulose subgrosse minus confertim (clypeo magis crebre) punctulato, elevatione frontali ut cornu modicum inerme glabrum erecta; prothorace quam longiori ut 12 ad 7 latiori, supra fere lævi (partibus lateralibus mediis sat rugulosis exceptis), parte antica magna profunde excavata, hac utrinque cornu brevi crasso tri-apiculato armata et in fundo longitudinaliter abrupte elevata (parte elevata sat lata supra planata antice et postice dilatata, ad latera abrupte declivi), marginibus lateralibus vix crenulatis, margine antico profunde bifoveolato, angulis anticis vix prominulis posticis rotundatis; scutello subtiliter punctulato; elytris sat fortiter punctulato-striatis, stria 15ª cum 14ª haud coeunti; tibiis anticis extus 5-dentatis, posticis transversim multicarinatis. Long. 7, lat. 5 lin. (vix).

Femina latet.

This very distinct species is a member of Group i. in the preceding tabulation. Unfortunately the unique type has lost the club of both its antennæ, which makes a difficulty in placing it in the tabulation. If the antennal club is normal the species must stand beside *Macleayi*, Blackb., if its antennal club is globose its place is beside *Bovilli*, Blackb., from both which species (and from all others known to me) the remarkable form of the excavated portion of its pronotum readily distinguishes it. That excavation is a large and deep cavity (resembling in area and depth the corresponding cavity in *B. rhinoceros*, Macl.), which is traversed longitudinally by an elevation suggestive of a bridge or viaduct. The horns of the pronotum are stouter and much shorter than those of *B. rhinoceros*, and each of them is truncate

at the summit; from the truncate summit three small blunt projections rise (the smallest of them in front, the two others of equal size and placed behind transversely in such fashion that, viewed obliquely from behind, each horn appears as a short erect lamina bifid at its apex). I have not seen any Bolboceras likely to be the female of this species.

W. Australia (Beverley).